

WHAT IS CLAIMED IS:

1. A two-dimensional beam writing position detecting device, comprising:

an optical system for scanning on a photoconductor by laser beams emitted from a semiconductor laser to form an electrostatic latent image and arranging a plurality of the laser beams in two dimensions and slantingly scanning each the laser beam for forming the electrostatic latent image on the photoconductor at a predetermined angle ( $\theta$ ); and

a detector for detecting the laser beams for determining the first writing position on the photoconductor of the laser beams,

wherein a longitudinal direction of a beam light receiving surface of the detecting device inclines at the substantially same angle ( $\theta_1$ ) as the slant scanning angle ( $\theta$ ) with respect to the perpendicular of a scanning direction of the plural beams.

2. The two-dimensional beam writing position detecting device according to claim 1, wherein the angle ( $\theta_1$ ) of inclination of the longitudinal direction in the beam light receiving surface of the detecting device is within the range represented by the following expression:

$$\theta_1 = \theta \pm \tan^{-1}[\text{a beam radius}/(\text{P2} \times \text{the number of beams of a primary scanning direction})]$$

where P2 in the expression is a beam pitch of a sub-scanning direction.

3. The two-dimensional beam writing position detecting device according to claim 1, wherein a length S1 of a laser beam sub-scanning direction of the beam light receiving surface of the detecting device is more than or equal to a value in which a beam diameter is added to a value in which a beam pitch P2 of the sub-scanning direction is multiplied by [(the number of beams of the sub-scanning direction)-1], and a length S2 of a laser beam scanning direction of the beam light receiving surface is less than [(a beam pitch P1 of the scanning direction)-(a beam diameter)].

4. The two-dimensional beam writing position detecting device according to claim 1, wherein the beam light receiving surface of the detecting device is partitioned and formed by a slit.

5. The two-dimensional beam writing position detecting device according to claim 1, wherein the beam light receiving surface of the detecting device is formed by a photodetector.

6. The two-dimensional beam writing position detecting device according to claim 1, wherein a signal detected by a scanning direction beam of the first row or the plurality-th row on a beam light receiving surface of the detecting device is formed into a writing position signal on a photoconductor of the scanning direction beam of the first row, and a writing position signal on the photoconductor of the scanning direction

beam of the second or subsequent row is formed into a signal in which a particular delay or lead is provided so that a scanning direction writing position on the photoconductor matches with the beam of the first row with respect to the signal obtained by the above.

7. A two-dimensional beam writing position detecting device, comprising:

an optical system for scanning on a photoconductor by laser beams emitted from a semiconductor laser to form an electrostatic latent image and arranging a plurality of the semiconductor laser beams in two dimensions and slantingly scanning each the laser beam for forming the electrostatic latent image on the photoconductor at a predetermined angle ( $\theta$ ); and

a detector for detecting the laser beams for determining the first writing position on the photoconductor of the laser beams,

wherein a signal detected by a scanning direction beam of the first row or the plurality-th row on a beam light receiving surface of the detecting device is formed into a writing position signal on the photoconductor of the scanning direction beam of the first row, and a writing position signal on the photoconductor of the scanning direction beam of the second or subsequent row is formed into a signal in which a particular delay or lead is provided so that a scanning direction writing position on the photoconductor matches with the beam of the

first row with respect to the signal obtained by the above.

8. An image forming apparatus wherein a two-dimensional beam writing position detecting device according to claim 1 is installed in a position on beam scanning and other than on a scanning line of the photoconductor.

9. An image forming apparatus wherein a two-dimensional beam writing position detecting device according to claim 1 is installed in a position on beam scanning and other than on a scanning line of the photoconductor.